

REMARKS

A Petition for Extension of Time is being concurrently filed with this Amendment. Thus, this Amendment is being timely filed.

Applicant respectfully requests the Examiner to reconsider the present application in view of the foregoing amendments to the claims and the following remarks.

Status of Claims

Claims 1-7 are pending in the present application. Claims 1, 5, and 6 have been amended herein.

No new matter has been added with these claim amendments. The amendment to claim 1 is editorial in nature and has support in the present specification in the paragraph bridging pages 3-4 (see also the paragraph bridging pages 18-19). The amendment to claim 5 is also editorial in nature, as the meaning of this claim has not changed. Support for the amendment to claim 6 can be found at page 11, line 25 to page 13, line 4 of the present specification. Thus, no new matter has been added by way of these amendments. Also, with respect to the clarifying amendments, Applicant in no way is conceding any limitations with respect to the interpretation of the claims under the Doctrine of Equivalents.

Based upon the above considerations, entry of the present amendment is respectfully requested.

In view of the following remarks, Applicant respectfully requests that the Examiner withdraw all rejections and allow the currently pending claims.

Issues Under 35 U.S.C. § 112, Second Paragraph

Claims 1-7 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite as stated in paragraphs 1-2, page 2 of the outstanding Office Action. This rejection is respectfully traversed, and reconsideration and withdrawal thereof are respectfully requested.

The Examiner states that it is not clear whether the temperature limitation is to be applied for both choices of Z or only Formula (3). Claim 1 has been amended herein to further clarify that the temperature range is applied only when Z is a group represented by Formula (3).

With regard to claim 6, the Examiner further stated that it is not clear what is intended by the aromatic cyclic group for R'. Applicant respectfully submits that claim 6 properly depends on claim 1 (see claim 6 herein) since, e.g., an aromatic heterocyclic group is a type of heterocyclic group. If the Examiner still questions claim 6 (regarding paragraph 2 at page 2 of the Office Action), Applicant respectfully requests the Examiner to contact Applicant's representative at the contact information given below.

Reconsideration and withdrawal of this rejection are respectfully requested.

Issues under 35 U.S.C. § 102

Claims 1 and 3-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Von Doz *et al.* (*Angew. Chem.*, Vol. 73(19), p. 657 (1961)).

Also, claims 1, 2 and 4-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by McKay *et al.* (*Canadia Journal of Chemistry*, Vol. 38, pl. 343-358 (1960)).

Applicant respectfully traverses, and reconsideration and withdrawal of both rejections are respectfully requested.

Von Doz *et al.*

As is stated by the Examiner, compound (III) of Von Doz *et al.* corresponds to N-substituted carbamic acid derivative represented by Formula (I) of the present invention wherein Z is a group represented by Formula (3). However, the present invention differs from the Von Doz *et al.* disclosure in that Von Doz *et al.* carried out a cyclization reaction at 90°C. Thus, because “a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,” the cited Von Doz *et al.* reference cannot be a basis for a rejection under § 102(b). See *Verdegal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Furthermore, in contrast to the Von Doz *et al.* disclosure, the heating step of the present invention is carried out at a temperature in a range of from 95°C to 145°C which leads to differences in yield or purity levels. As mentioned at page 22, lines 2-7 of the specification, when Z is a group represented by Formula (3), a reaction temperature that is lower than 95°C invites a decreased reduction rate (or reaction speed). Also, a temperature exceeding 145°C invites decomposition of the product N,N',N''-trisubstituted isocyanuric acid, thus inviting a decreased yield. With respect to the higher temperature, a comparison of Example 18 (pages 35-36 of the specification) with Comparative Example 1 (page 36) supports Applicant's observations.

Because there is no Comparative Example provided in the specification wherein the reaction temperature is lower than 95°C, Applicant herein encloses a 37 C.F.R. § 1.132 Declaration by Naruhisa Hirai, the present inventor. The Rule 132 Declaration provides an experimental example wherein a cyclization reaction is carried out at 90°C. In the experimental example, the reaction is carried out at 90°C for 60 minutes, and yield of N, N', N''-tris(benzyloxy)isocyanuric acid is 31%. The yield is notably lower than that of Example 18 (55%), wherein reaction is carried out at 120°C for 20 minutes.

Thus, because of the lack of disclosure of all features as instantly claimed, the rejection in view of Von Doz *et al.* is overcome. Reconsideration and withdrawal are respectfully requested.

McKay *et al.*

The cited McKay *et al.* reference discloses a reaction of oxyamine hydrochloride compound (I) with phosgene to yield N,N',N''-trisubstituted isocyanuric acid (IV). McKay *et al.* further disclose compound (II) represented by formula RONHC(O)Cl as a reaction intermediate (it appears that the Examiner is referring to compound (II) in McKay *et al.* and N-substituted carbamic acid derivative represented by Formula (1) in the present application). However, Applicant notes that Z in Formula (1) of the present invention is -O-R' (Formula (2) in claim 1) or imidazole group (Formula (3) in claim 1 also). Therefore, the compound (II) of McKay *et al.* is not identical to the N-substituted carbamic acid derived by Formula (1) of the present invention.

Applicant notes ever further distinctions from McKay *et al.* The method of McKay *et al.* is unfit for industrial utilization, because it requires continuous feeding of highly toxic phosgene

throughout the reaction. By contrast, the present invention does not need to treat a large quantity of dangerous materials. Additionally, the method of the present invention possesses economic advantages, because objective isocyanuric derivatives can be obtained from N-substituted carbamic acid derivatives as represented by Formula (1) only by heating. Even when the production process is started out from preparation of said N-substituted carbamic acid, it can be produced easily because N-substituted carbamic acid can be yielded in high yield by reacting an O-substituted hydroxylamine with equivalent amount of a carbonic compound (see Production Example 1 and Examples 1-13 in Applicant's specification).

Furthermore, McKay *et al.* obtained 1,3,5-tribenzyloxy isocyanuric acid at a yield of 51.5% at the most (page 356, lines 14+). By contrast, the present invention can produce N,N',N''-tris(benzyloxy)isocyanuric acid at a yield of over 70% or even 80% (Examples 1-4; see starting at page 29). Thus, the methods are not the same.

Regarding claim 2 of the present invention, there are certain combinations of raw materials recited. Each raw material goes through N-substituted carbamic acid derivatives represented by Formula (1) to yield N,N',N''-trisubstituted isocyanuric acids represented by Formula (4) (see also page 14, lines 5-17 of the present specification). Therefore, the invention of claim 2 also possesses novelty (and is not obvious) for the reasons stated above.

Applicant notes that the combination of O-substituted hydroxyl amine (C), phosgene as compound (II) and hydroxyl compound (D) may somehow look similar to McKay *et al.*. However, this combination first gives carbonate compound by reaction of hydroxyl compound (D) with phosgene, then the obtained carbonate compound reacts with O-substituted with hydroxylamine (C)

to yield the N-substituted carbamic acid derivative represented by Formula (1). As one example, phenol reacts with phosgene to yield diphenyl carbonate, wherein the diphenyl carbonate reacts with O-substituted hydroxylamine (C) to yield the N-substituted carbamic acid (1). In this connection, Applicant respectfully refers the Examiner to Examples 14-17 in the present specification which involve reactions of diphenyl carbonate with O-benzylhydroxylamine.

Furthermore, the present invention is also directed to a process for producing an N,N',N''-trisubstituted isocyanuric acid comprising a purifying step with the use of an alcohol-containing solvent (see independent claim 7, which is also cited in the Office Action). As a result of the mentioned purification step, the unreacted raw materials and by-products (such as imidazole) attach to the reaction product, and added base and other components can be efficiently removed to thereby yield a N,N',N''-trisubstituted isocyanuric acid at higher purity levels (page 28, lines 7+). On the other hand, McKay *et al.* is completely silent about such a purification step in pending claim 7. In other words, McKay *et al.* also fail to disclose all features of the invention represented by pending claim 7.

Thus, for several reasons as explained above, this rejection in view of McKay *et al.* has been overcome. *Verdegaal Bros.* Reconsideration and withdrawal of this rejection are respectfully requested.

Conclusion

A full and complete response has been made to all issues as cited in the Office Action. Applicants have taken substantial steps in efforts to advance prosecution of the present

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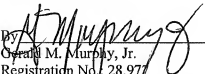
application. Thus, Applicants respectfully request that a timely Notice of Allowance issue for the present case.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact Eugene T. Perez (Reg. No. 48,501) at the offices of Birch, Stewart, Kolasch & Birch, LLP.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,


By _____
Gerald M. Murphy, Jr.
Registration No. 28,977
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road, Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant

Attachment: Declaration pursuant to 37 C.F.R. § 1.132